KEYNOTE ADDRESS

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When I was asked to come here to give this keynote speech, I asked: Why are we having a conference on urban design and telecommunication? The first question to answer is why urban design and telecommunication are in the same conference, so I will address that first. I will then ask what do we know, and the what do we know questions will be in very general terms, because later you are going to hear from the real experts, the people who have done most of the research. I will ask: What do we know about urban design, what do we know about telecommunication? Then I am going on to ask the question about large-scale implementation, because if anything is going to happen, things have to be implemented on a wider scale than we are seeing today. Finally I will talk about the larger context of economic and social issues.

Why urban design and telecommuting? If we really feel that we have to impose some controls on the use of automobiles, the way to do that is pricing. We would also say that pricing is really difficult. There are many difficulties involved in changing the price of automobile travel. At the same time, we have to respond to air quality and other environmental concerns. We have concerns about fragile habitats, about preserving open space, noise, about toxics, and all sorts of other things. This long list of issues is related in some way to transportation planning and particularly use of the automobile. So what do these two strategies have in common from a public policy standpoint? They have in common the fact that they are win-win. They give people more choices, and they make people better off. Unlike pricing policies, there is really no pain involved from an individual standpoint. These are both strategies that provide more choices for housing and work location, and at the same time reduce automobile use and achieve environmental goals.

The key question to answer is: Do either of these policies significantly affect travel demand? Are the anticipated reductions in automobile trips and VMT (vehicle miles of travel) documented in a rigorous manner? Are these changes significant enough to merit consideration in a new generation of planning models? Since a good part of the TMIP program is about making better planning models, this is a key consideration.

Now about urban design, generally called in planning circles the new urbanism. It is a combination of concepts, referred to as TND (traditional neighborhood development), or NTND (neotraditional neighborhood development), or TOD (transit oriented development).

This concept is a reaction to the standard planned community developments seen in the suburbs

today. The basic idea of new urbanism is to provide people with a more friendly neighborhood. Its characteristics are:

1) to mix different kinds of land uses together, that is, residential and non-residential;
2) to vary densities of housing to accommodate varying income groups;
3) to achieve higher development densities compared to what is standard in suburban areas today, and
4) to use gridlike street patterns to make nonmotorized, that is, bicycle and pedestrian, movement more direct and efficient.

There is also an emphasis on neighborhood services (community services, neighborhood retail concepts) to give people the opportunity to engage in everyday nonwork activities close to home with the idea that some would walk or take transit or not drive alone to those activities. The goals are to encourage less private vehicle travel through promotion and provision of high quality transit service as well as bike and pedestrian movement and circulation. Another goal is to balance jobs and housing, giving people the opportunity to work close to home. There is also another level of goals less relevant from a transportation perspective: a focus on local community and social cohesion, and an effort to develop through a new design paradigm more socially diverse communities.

There has been tremendous interest in what happens in these "new urbanism" communities, but they are not around yet. There are six or eight actual large developments based on these concepts. The first, Seaside in Florida, is a unique situation and therefore is not a good basis of comparison. The others are in varying stages of development. Consequently, many researchers are trying to research something that is nonexistent. One choice is to look at comparable situations, so we look for existing neighborhoods that have similar attributes to the TND concept; then we look at people's travel behavior and compare travel patterns in TND- like neighborhoods with those in traditional or conventional lower density suburban neighborhoods. A second possibility is to simulate that kind of community and population and see what happens. If you think about the principles on which these communities are based, there are conflicting incentives with respect to travel demand. A grid system does not give more accessibility to pedestrians and bicycles; it gives more accessibility to motor vehicles. So all else being equal, we might consider that there may be more motor vehicle travel as a result of the grid street system. On the other hand, if the accessibility is more concentrated, we should expect to see more nonmotorized travel. If we also accompany these developments with high quality transit, better transit should promote more transit use. Whether transit and pedestrian use are encouraged, and whether there is more travel by those modes does not necessarily translate into less motor vehicle travel, since more accessible neighborhoods may stimulate more total travel. Results are still somewhat mixed. In terms of comparative studies, we find generally that there are in fact fewer motor vehicle trips in TND-like neighborhoods when we make these comparisons. There are generally more transit trips if the comparisons are in neighborhoods with high quality transit, and there are also more pedestrian trips. Findings are not consistent, however, across all studies. Another problem associated with this research is that in many cases other factors are not held constant. Raw comparisons of density and trip generation are often made without sufficient attention paid to all of the different characteristics of the population and the microgeography of places that are also part of this equation. There is also the problem of relative location; no matter how hard we try, the fact remains

that most TND type neighborhoods are located closer to the central core of metropolitan areas than suburban low density conventional developments. There is a spatial relationship here that is related to the total accessibility of the metropolitan region and to people's overall preferences of central or close to central location versus suburban or even exurban location that is very hard to control for in this type of research.

In reviewing this research, I find the reduction of automobile trips associated with TND-type neighborhoods to be most uncertain. Any travel savings that might accrue are highly localized for short neighborhood trips. If we are looking for ways to alleviate congestion, these are the kinds of trips that are made in uncongested areas anyway. These short trips really have no impact on the regional system. The question is: Do these have any indirect effect that might be positive from an air quality or other environmental standpoint?

What about broader implementation? If we are to develop models incorporating these kinds of characteristics, we must make a case for what we would see if we were to take this TND concept and implement it on a much broader scale. The first issue that comes to mind is what I call the self-selection problem, or what econometricians call endogeneity, the question of how we choose our neighborhoods and where we live. I know that most people who prefer to use transit and are, to some extent, transit dependent are going to try as much as possible to choose locations that are transit accessible both to live and to work. The question is: If we provide this new urban form on a large scale, are we going to get the same returns from it that we might have seen in these earlier studies? This is a big question that remains to be answered.

Another big question is: What is the market? I teach in a school of urban planning and development. We have a planning degree and a real estate degree, so we talk often with developers. We learn a lot about the development process, so I always have to ask: Is there a market; could we do this in the marketplace? The record does not look too promising at this time. First of all, most of the developers of these major new urbanism projects have had tremendous financial problems; they have had to restructure loans, they have almost gone bankrupt, or have gone bankrupt. Proponents say that this was all the recession, that they all started at the wrong time. As you know, we had a terrible recession in the housing market, and proponents claim that once the housing market turns around everything will be fine. Critics say that the infrastructure cost of these developments is very, very high, and as a result, there has to be a premium on the homes sold. From a profit standpoint that puts you into the middle upper class or move-up market. There is a real question about how we can we develop truly mixed neighborhoods, given the economics involved in these developments.

Existing efforts to build these projects have been located in suburban areas, not urban areas, often in fairly remote locations far from job centers and far from transit. In such locations, it is hard to imagine that travel patterns would be any different. I asked one of the developers who was a marketing person for these kinds of TND type developments, "What is your rule of thumb, how do you decide where to build a project like this?" His remark was, "As long as it is within 30 miles of a job center, we can do it." That is not exactly the architectural dream that was developed around new urbanism. The other consistent problem is the neighborhood retail element. We live in a world where people shop

once a week, and where people are more than happy to jump into their minivans and go to Home Depot or Wal-mart to save a few dollars, so there is a real question about the financial viability of neighborhood retail. Developers argue that they have to subsidize the local retail or it does not exist. If developers are subsidizing the retail, the purchaser is paying a higher price for the house and is just paying for that service in another way.

The other issue that always comes up is the new urbanism concept versus lifestyle preferences. We have not seen a lot of overt activity that tells us that people prefer to live in higher densities in order to be close to jobs. In fact what we see is the reverse; we see that people are quite willing to drive long distances in order to live in lower density circumstances. One of Bob Cervero's students gave a paper at another conference recently, and his analysis showed that if we were to pursue higher density developments (mixed use developments near job centers) one of the outcomes might be even longer commutes as people who preferred lower densities were forced even further away from job centers. Although some people would live closer, some would live even further away, and the net effect on commuting would then be unknown.

Another lifestyle question is the issue of neighborhood shopping versus "big-bucks" retailing. The neighborhood idea of people running down to pick up a few things at the store, which is all you do if you are on your bike or walking, does not really complement current lifestyles. People are under tremendous time pressures, and we see great efforts to economize and save one's time. It seems difficult to believe that there would be much business at the neighborhood level. What we see instead are these incredible economies of retailing in the form of "big-bucks" retailing, and people seem to be quite happy to drive 10 to 15 miles to go to these places. That is what we are seeing now in the real world.

Another point that I think a lot of people lose in the discussion is the "opportunity cost" of neighborhood activities. The only places where we see thriving small-scale neighborhood activities are either in rather high-end neighborhoods, where there are gourmet/boutique types of goods being sold at a premium price, or in the ghettos of the inner city where people lack accessibility and are forced to shop close to home at "mom-and-pop" stores. There is much evidence that indicates that prices are higher there as a result. There is a substantial downside at least in the real world of today's existing neighborhood retailing.

Let us go on to telecommuting. For telecommuting I chose to use a narrow definition of those who have a regular workplace provided by the employer but who work at home or somewhere else part of the time. We have two categories of telecommuters: one is home-based and works at home one or two days a week; the other is center based and works at some remote facility closer to home than the conventional workplace. It is important to note that home-based workers are not necessarily telecommuters. There are all sorts of home-based workers, some self-employed and some doing other things.

Is this a complement or a substitute? In other words, will telecommuting and the use of telecommunications technology in the long run reduce the demand for travel because it is a substitute for travel, or will it in fact act as a complement to travel, meaning that the total amount of interaction will

increase as a result of this new form of accessibility? The analogy is e-mail: although your phone may not ring nearly as much, you can be answering e-mail for hours, and your total amount of interaction has definitely increased.

The question, in terms of the strict definition of telecommuting, is that if people do not have to travel to the office quite so frequently, what happens? Clearly there is an incentive from a theoretical standpoint to take some of these savings and move even further away from work.

Secondly, it is possible that commuting savings may generate more nonwork travel of one form or another. It is also possible that telecommunting will generate more motor vehicle commuting, when commute costs go down, we are more likely to prefer the highest quality mode—driving alone. Those are all possibilities.

According to Professors Mokhtarian and Salomon, research on home-based telecommuting that is both longitudinal and cross-sectional suggests, at least today, that the savings from reduced commuting are not entirely offset by other types of travel. There is a net reduction in travel at least as far as we know at this point. In the case of center based telecommuting, we have a different story, because people still have to go to the center. That means they are taking a trip, so perhaps we have some VMT savings. From an air quality standpoint, center-based telecommuting is at least questionable. At this point we do not have any evidence that telecommuting promotes more dispersion, or longer distance commuting, but we do know that people with the longest commutes are most inclined to telecommute. Moreover, if telecommuting is more broadly implemented, average trip distance for telecommuters will decline, and we will see a reduction in any type of travel savings.

What about broader implementation of telecommuting? One of the things we are finding out is that the telecommuting rate remains surprisingly low, considering its attractiveness. We also have very few examples of profitable telecommuting centers. We have numerous subsidized centers, but we do not have many that are making a profit. According to the statistics I have, it is still true that fewer people telecommute than walk to work, and fewer people telecommute than take transit. We are talking about a very small share of commuters. The obvious question is why is this happening, and it looks as if barriers to more widespread telecommuting are institutional, social, and organizational, not technological. There are issues of supervision and productivity—the boss does not want the worker where he cannot see him. There are questions about attachment to the employer: if you are spatially separated from the organization, do you then lose your affiliation and loyalty to that organization and become a less motivated employee? From the employee's perspective there are the issues of access to internal information. If you are not seen at the workplace, are you going to get the promotion? At home, there are numerous issues related to the conflict between household and work activities under the same roof.

Now let me talk about the larger context. We are only beginning to see the impacts of technology on society. That is just a small, partial list of some of the things that are going on. First, the growth of home-based shopping, home-based entertainment, home-based education and training and home-based employment. Second, in terms of service provision, we have financial, medical and legal

services being offered remotely. On rather frightening example is a type of surgery that can now be done remotely; the doctor is at his computer; the patient is thousands of miles away in a hospital, and robotics is used to conduct the operation.

We are only beginning to see what the future holds for all of us. The changes are structural and fundamental. It is not just a question of using technology and adapting it to current modes of working; things are changing much more than that. Information technology is related to what a lot of regional scientists call economic restructuring—fundamental changes in the way economic activity is organized. Those changes mean a tremendous rise in small businesses, which we are observing, a shift to networked production methods, globalization, and flexibility; flexibility in production, and flexibility in the use of the labor force. Work is changing. Today's young people will have a very different experience in terms of their working careers. Whom will you work for? You are going to work for many people. The career job of 25-30 years is coming to an end. You will work for many people over a period of time. You may also be working for yourself as a self-employed individual; you may be working on a short-term contract, you will work in all sorts of different ways. What are you going to do? You are going to do different things. The world is changing so quickly that you are going to have to be retraining rather consistently and constantly. When are you going to work? You are going to work at almost any time. We already have stockbrokers on the west coast whose day starts at 2:00 A.M. There are others who stay up all night because they are plugged into the global market in Japan or elsewhere. We know that people's hours are becoming more flexible, so we know that they are not working the conventional 9-5 in the numbers that they once were. Where will you be working? You may work at home, or from a mobile or temporary office, or for an employer downtown, or in the suburbs.

These are the only facts I am going to give you to demonstrate how things are changing. This is U.S. Census data, showing the percent change between 1980 and 1990 for the United States as a whole. Over that period we had an 18.5 percent increase in total employment in the United States. Self-employed persons increased by 20.8 percent. The number of people working at home increased by 56.2 percent; the number of people working part-time increased by 23.1 percent. Perhaps more surprising is that the number of people working more than 40 hours a week increased 40.7 percent, and the temporary workforce (from another data source) between 1980 and 1988 increased 175 percent. Kelly Services, for example, is one of the largest and fastest growing employers in the U.S. Since 1990 was a boom year, we could attribute at least some of that increase in working more than 40 hours per week to the booming economy. My suspicion is that it is more of a long-term trend. Corporate downsizing and streamlining results in a reduction in the size of the core labor force and more intensive utilization of the this labor force. There is also some indication that the number of people with more than one job is increasing.

From a travel standpoint, what does all this mean? The first thing it means, and these are all things that are highly relevant to planning and modeling, is that the work trip is no longer regular or predictable. It is no wonder that we see the work trips spread all over the day, given what is happening in the economy. What we would expect to see, although there is no evidence at this point, is more work related and personal business travel. As the share of work trips goes down, we should be seeing

work related and personal business travel going up. We should see less peaking of demand, because work is more flexible and will become even more so. Flexibility on the production side leads to more freight traffic demand, probably in smaller lots, as just-in-time inventory and other such practices should be generating more freight traffic. We should also see greater separation of home and work. If I do not know where I am going to be working next year or five years from now, it will be most difficult (or impossible) for me to be located close to that job. Therefore my expectation is that we will see people living further from their work rather than closer. The weakening of the linkage between home and work leads me to believe that amenities are going to play a much greater role in location choices. If we cannot live close to our jobs, we can live close to trees, if that is what we prefer, or we can live in the central city if that is what we prefer. In other words, both households and employers are becoming more footloose. All of that translates into what is an utter nightmare for modeling: more uncertainty. Although travel patterns are difficult to predict now, as this flexibility works its way through the economy, prediction is going to be even more difficult in the future.

Conclusion

We need to consider urban design and telecommuting in this larger context. The implementation of new urban design concepts really requires success in the marketplace; the ideas that are going to be successful are those that are adaptable in the marketplace.

I live in a high growth area, and one of the things I am fascinated by is the adoption of TND attributes or concepts by mainline developers in mainline suburban development. We now see houses with porches, but they still have three-car garages. We now see these houses fronted to the street, and they look very nice, but they are still on cul-de-sacs, and if they are not on cul-de-sacs, they are still isolated from a functional standpoint. We are starting to see these adaptations, but it may not be the picture that planners and architects have in mind. Despite the huge number of papers and articles produced on this subject, we still need more research to understand travel impacts. Much of the existing literature has been produced by advocates, and many studies lack appropriate methodology and data. In addition, as I noted earlier, some aspects of new urbanism certainly conflict current and likely future lifestyles.

With regard to telecommuting, implementation has been limited by social and organizational constraints, not by technology. Our ideas of telecommuting are based on an old conceptual model, it is using technology in the traditional workplace. Since we may have fewer traditional workplaces, that is not where the "action" is, and I think you are going to hear that many people are thinking in this direction. These more fundamental changes will have greater effect, and they are happening under the control of no one in particular. We certainly do need to consider these broader effects of information technology on all aspects of travel.